

# KIC 009607164

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009607164-01	OBS	0587.01	14.034926	143.533955	847.6	3.994	51.7	53.8	0.79	5258	2.75	40.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009607164-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

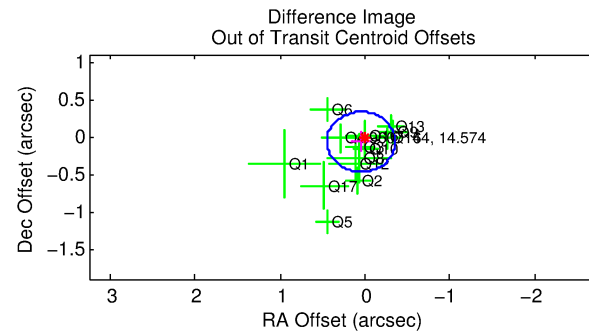
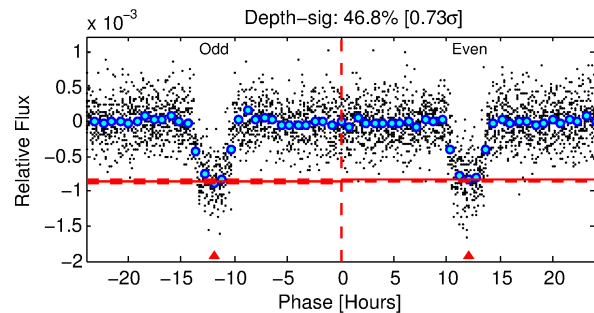
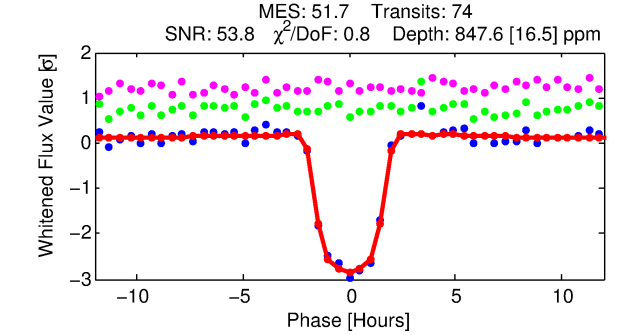
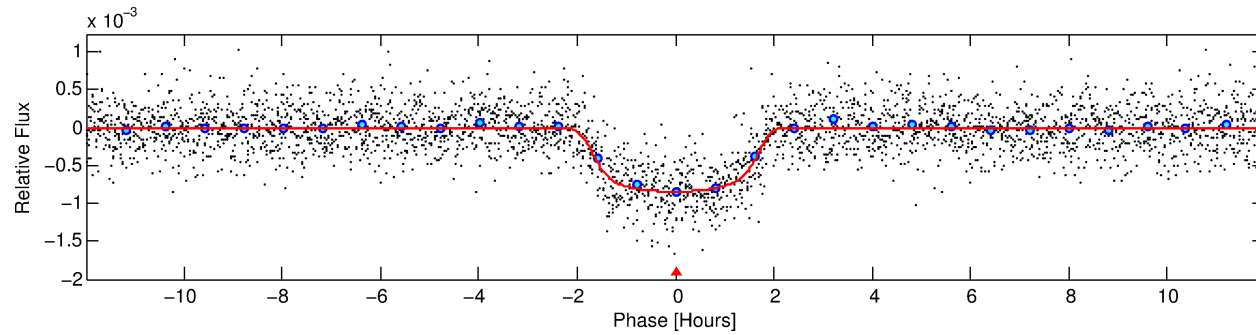
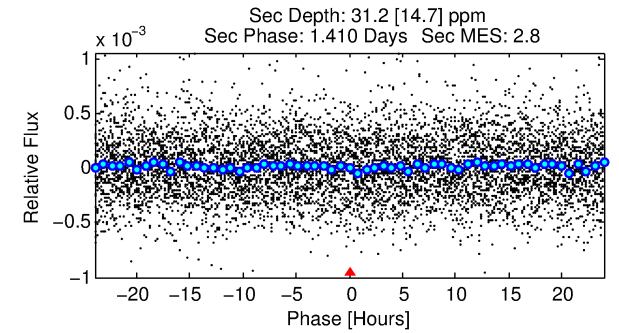
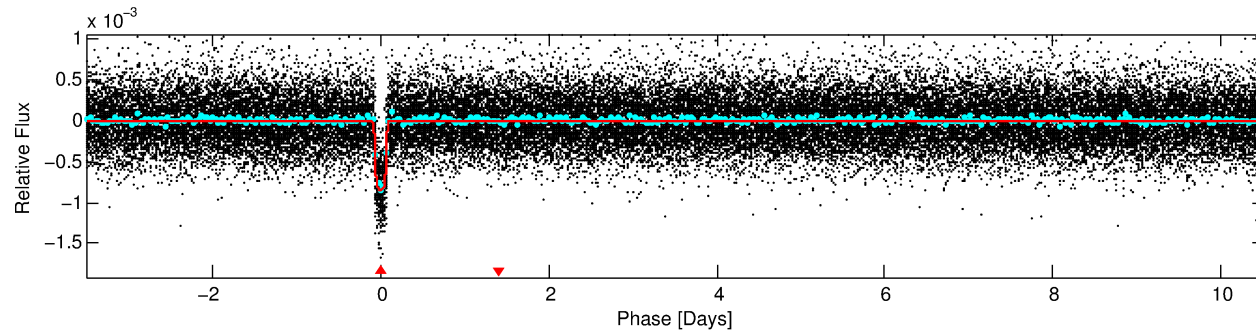
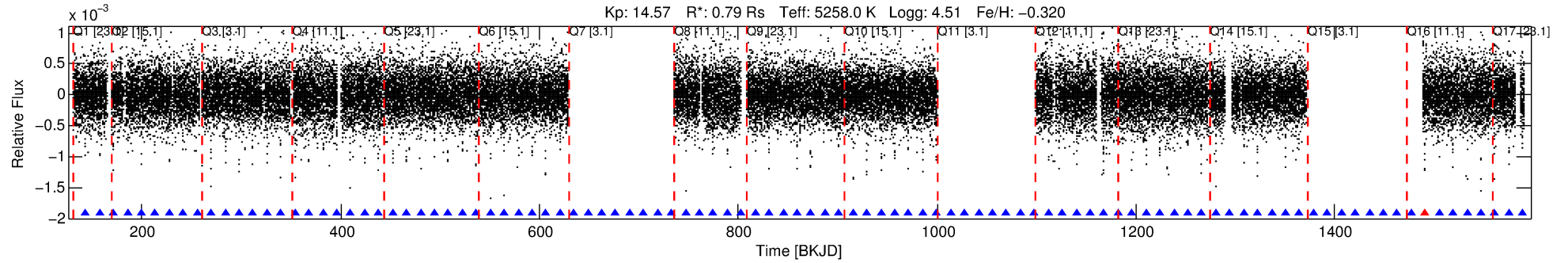
## Ephemeris Match Information For 009607164-01

No Significant Match Found

# DV One-Page Summary

KIC: 9607164 Candidate: 1 of 1 Period: 14.035 d

KOI: K00587.01 Corr: 0.946



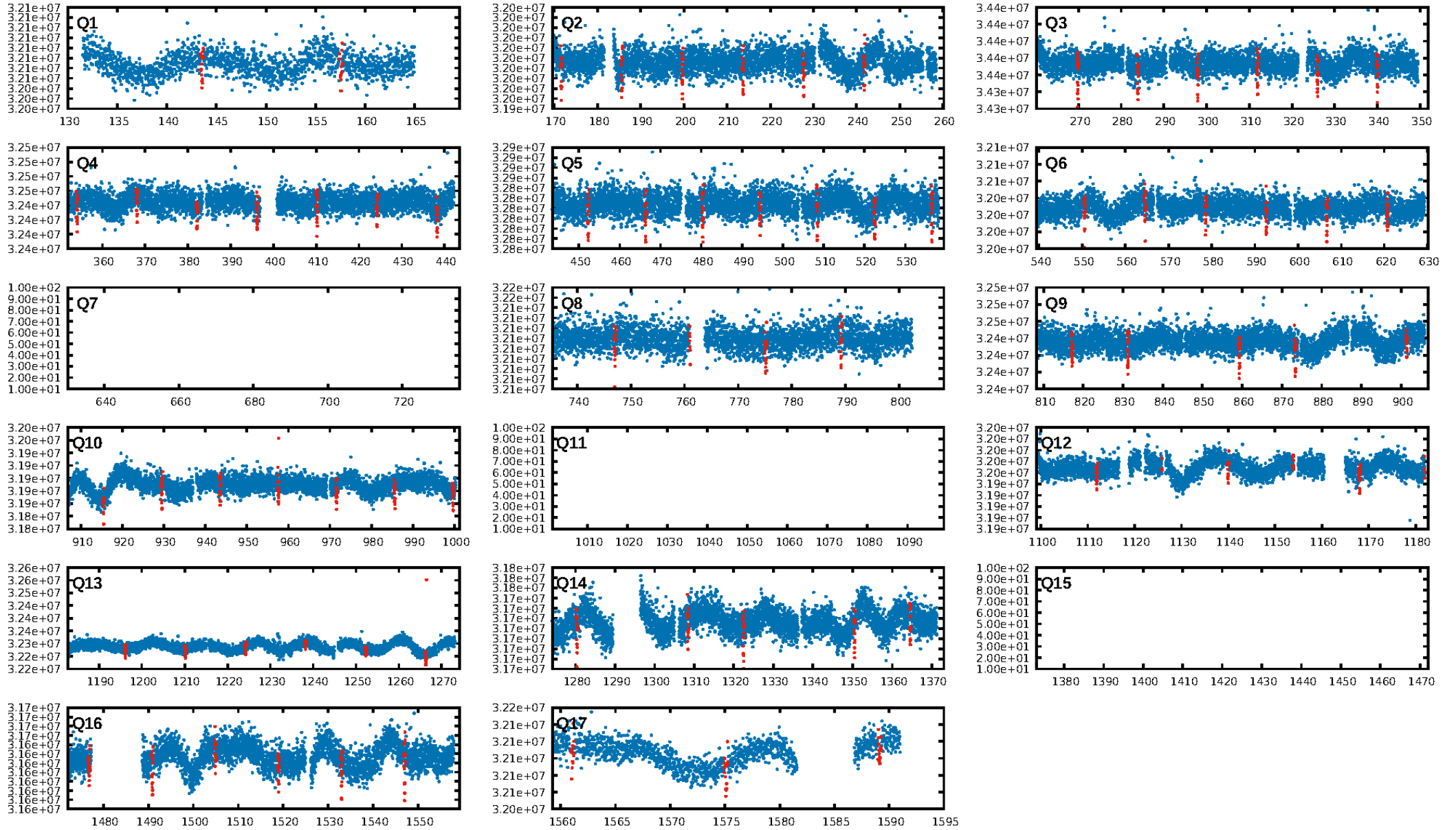
## DV Fit Results:

Period = 14.03493 [0.00003] d  
Epoch = 143.5340 [0.0014] BKJD  
Rp/R\* = 0.0321 [0.0012]  
a/R\* = 13.59 [1.99]  
b = 0.90 [0.03]  
Seff = 40.04 [8.32]  
Teff = 641 [33] K  
Rp = 2.75 [0.37] Re  
a = 0.1027 [0.0116] AU  
Ag = 23.88 [12.11] [1.89σ]  
Teffp = 2192 [270] K [5.70σ]

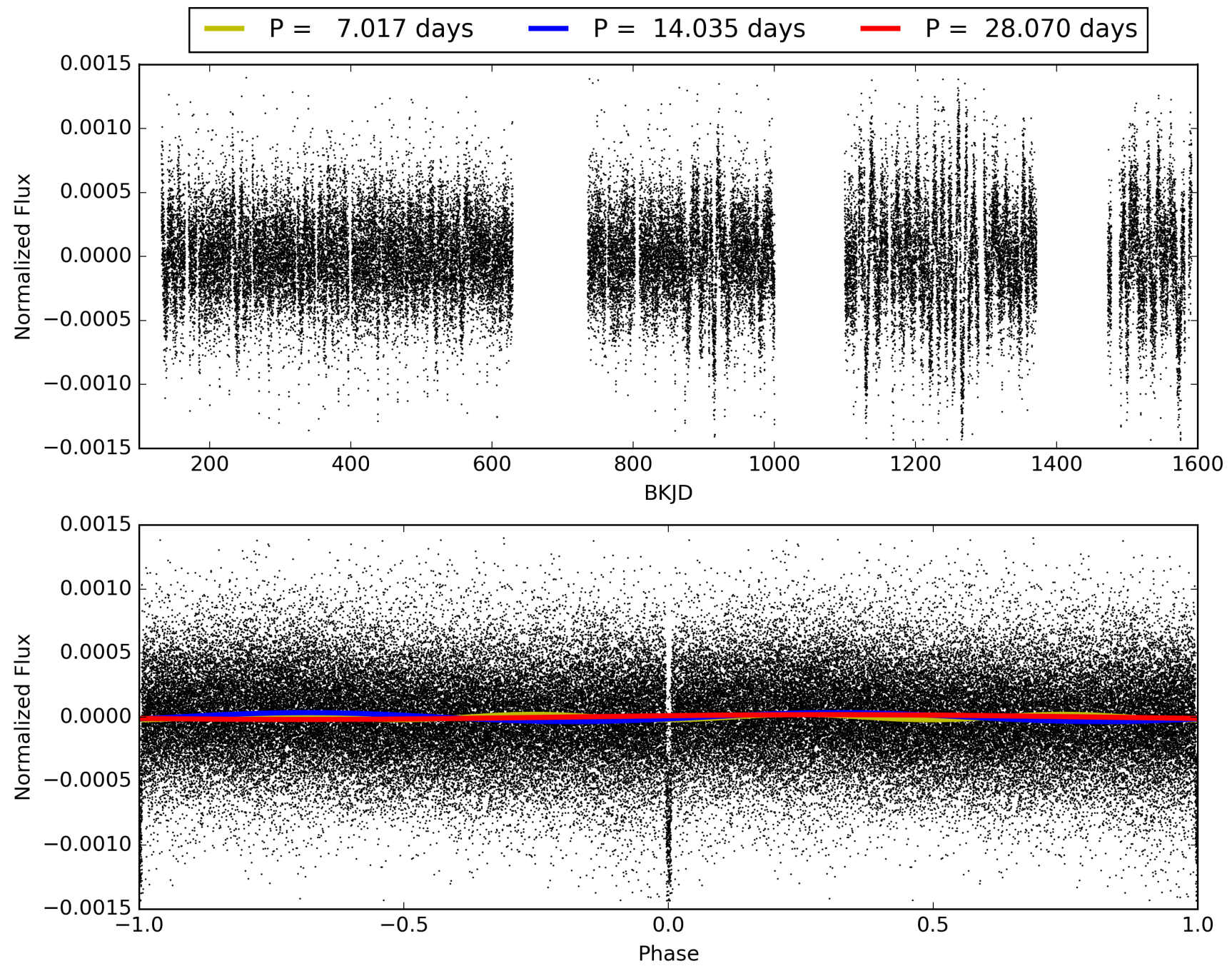
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 78.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.99 [68/69]  
GhostDiagnostic-chr: 3.326  
Centroid-sig: 49.3%  
Centroid-so: 0.234 arcsec [0.88σ]  
OotOffset-rm: 0.082 arcsec [0.61σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-rm: 0.418 arcsec [3.42σ]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009607164-01, PDC Light Curves

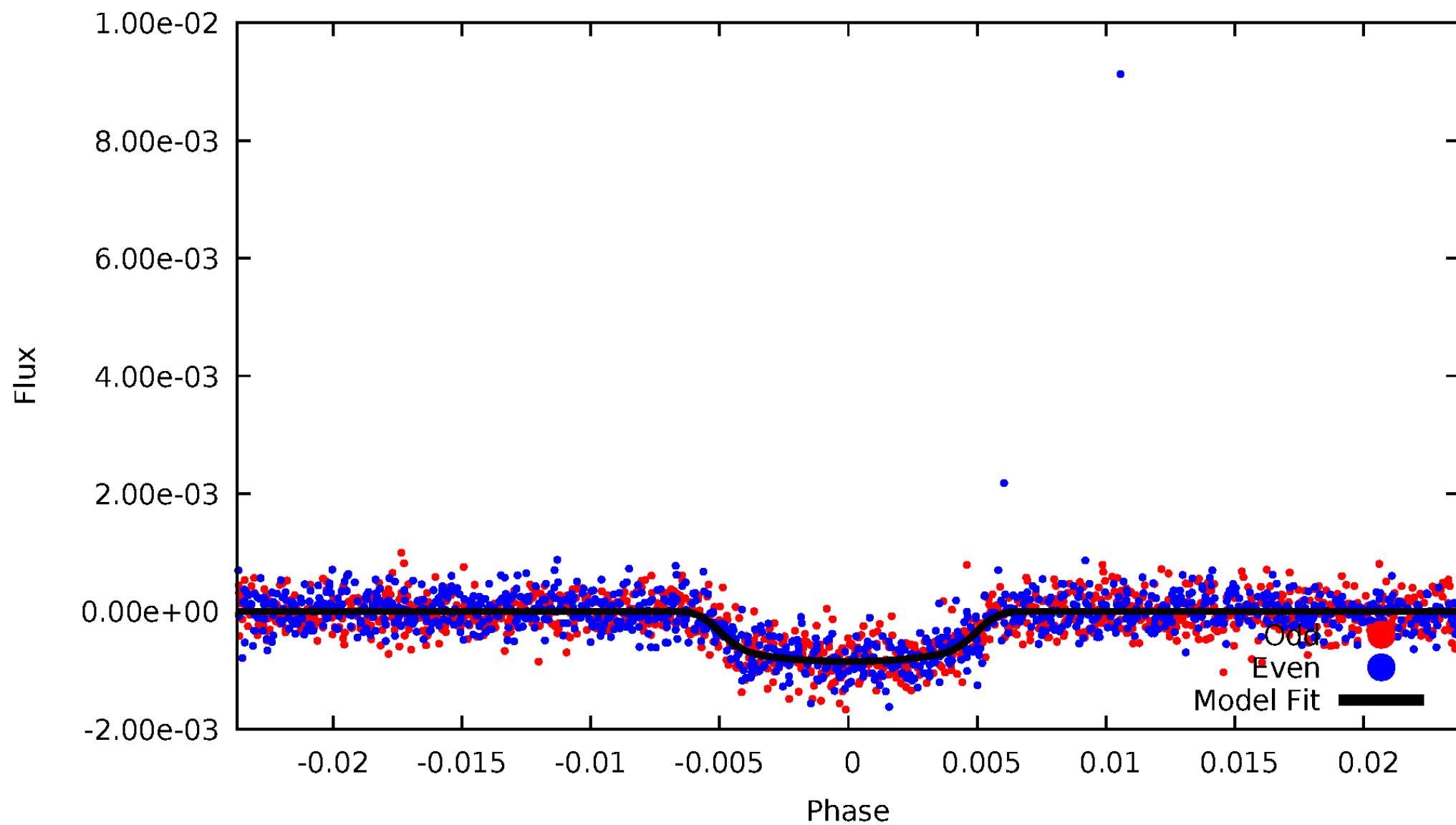


TCE 009607164-01



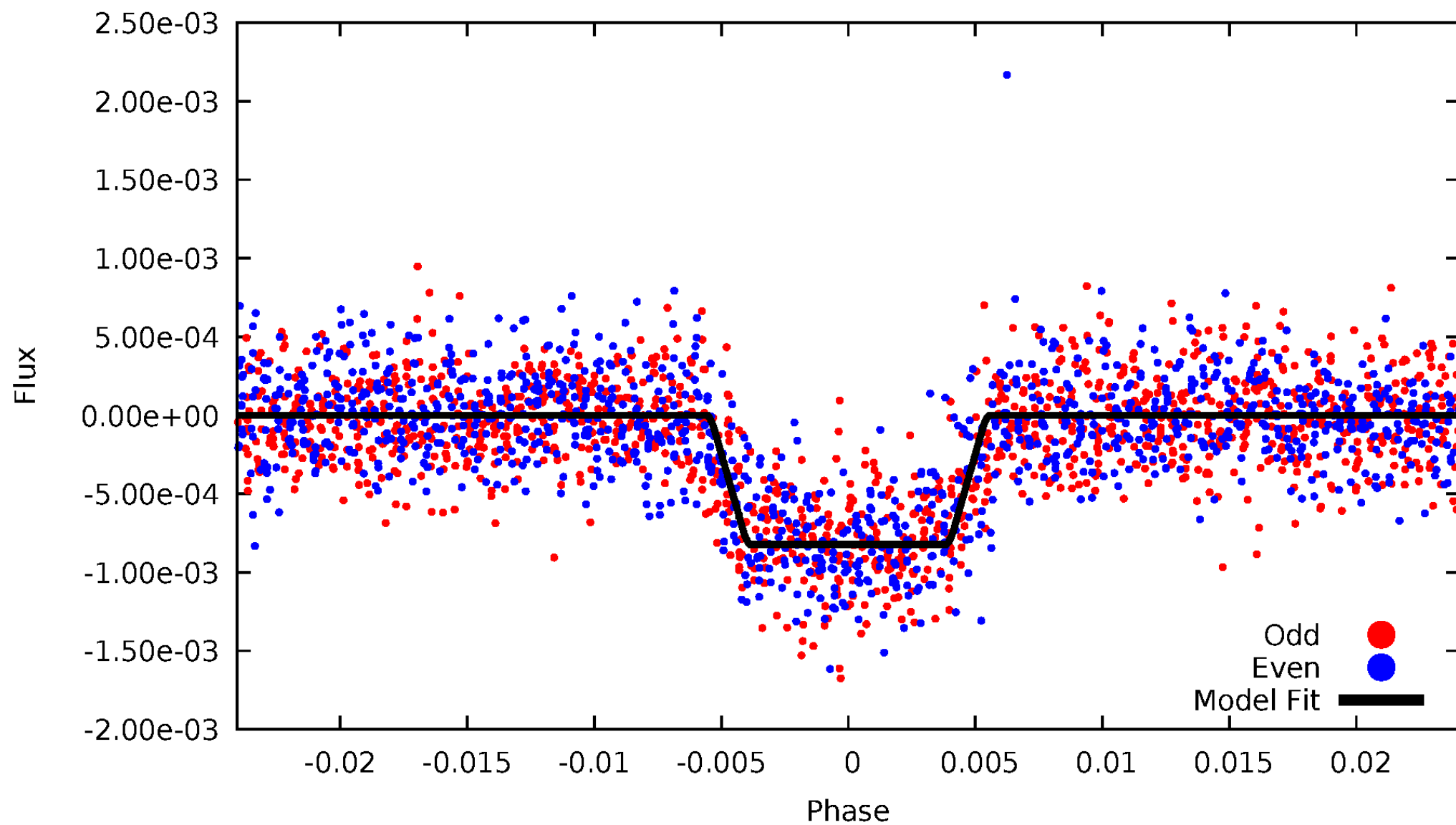
# DV Odd/Even

TCE 009607164-01



# ALT Odd/Even

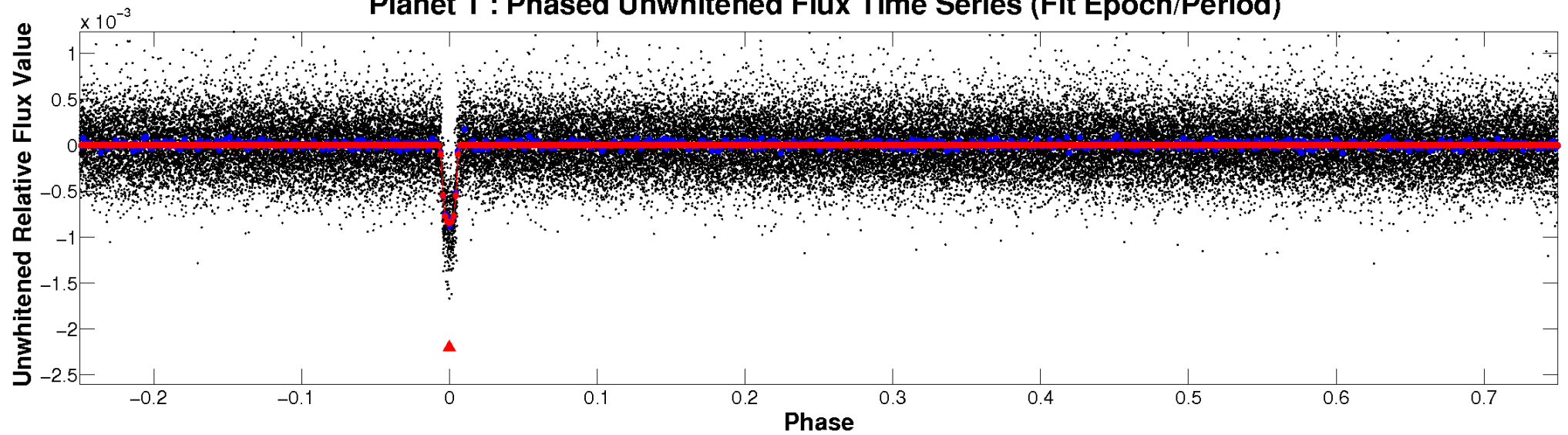
TCE 009607164-01



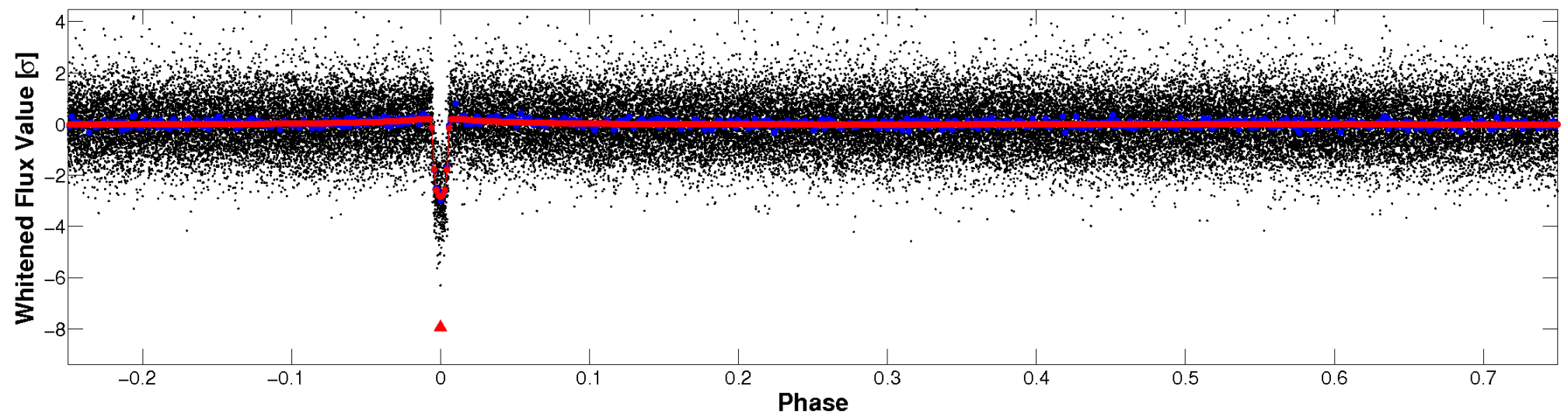


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

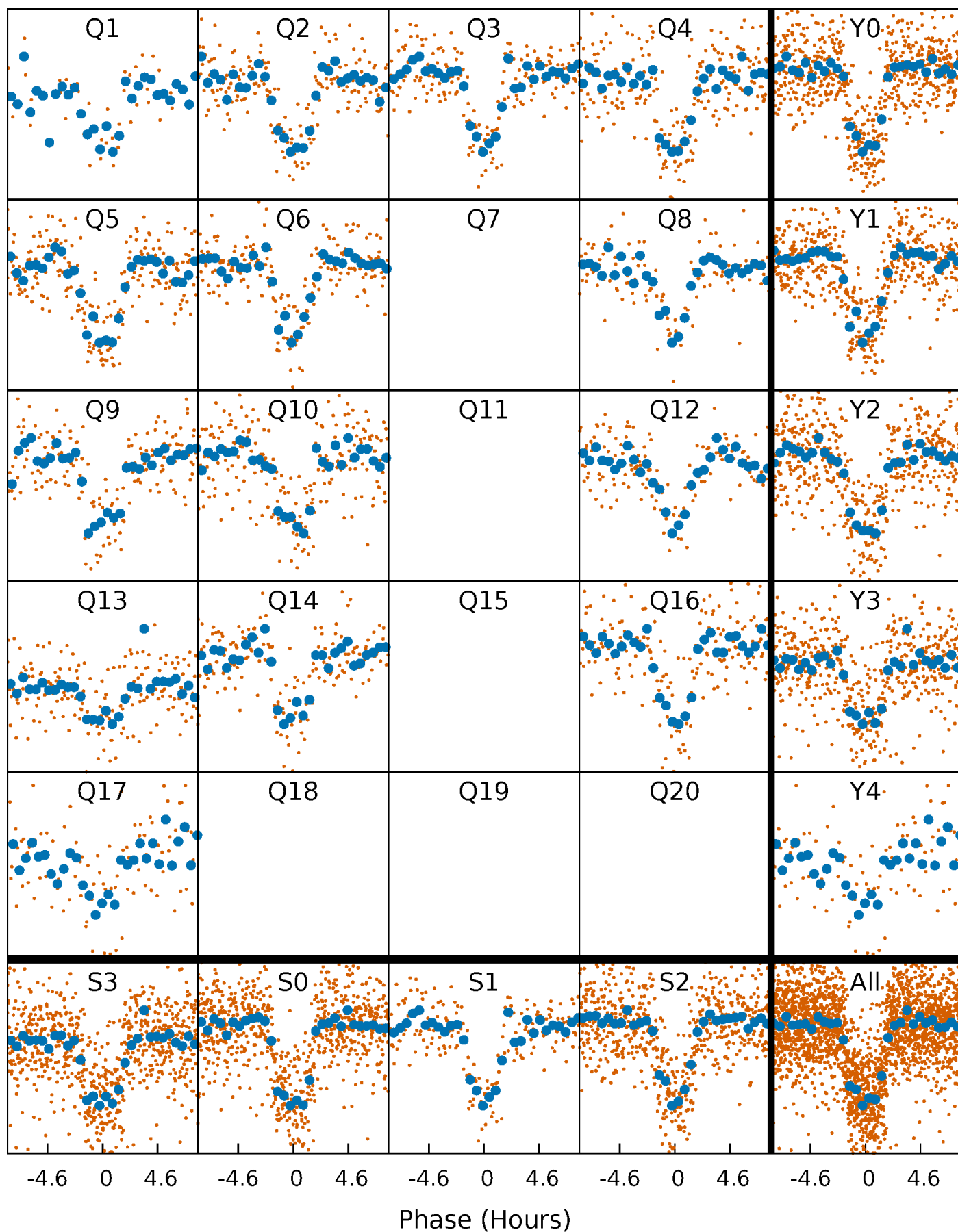


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

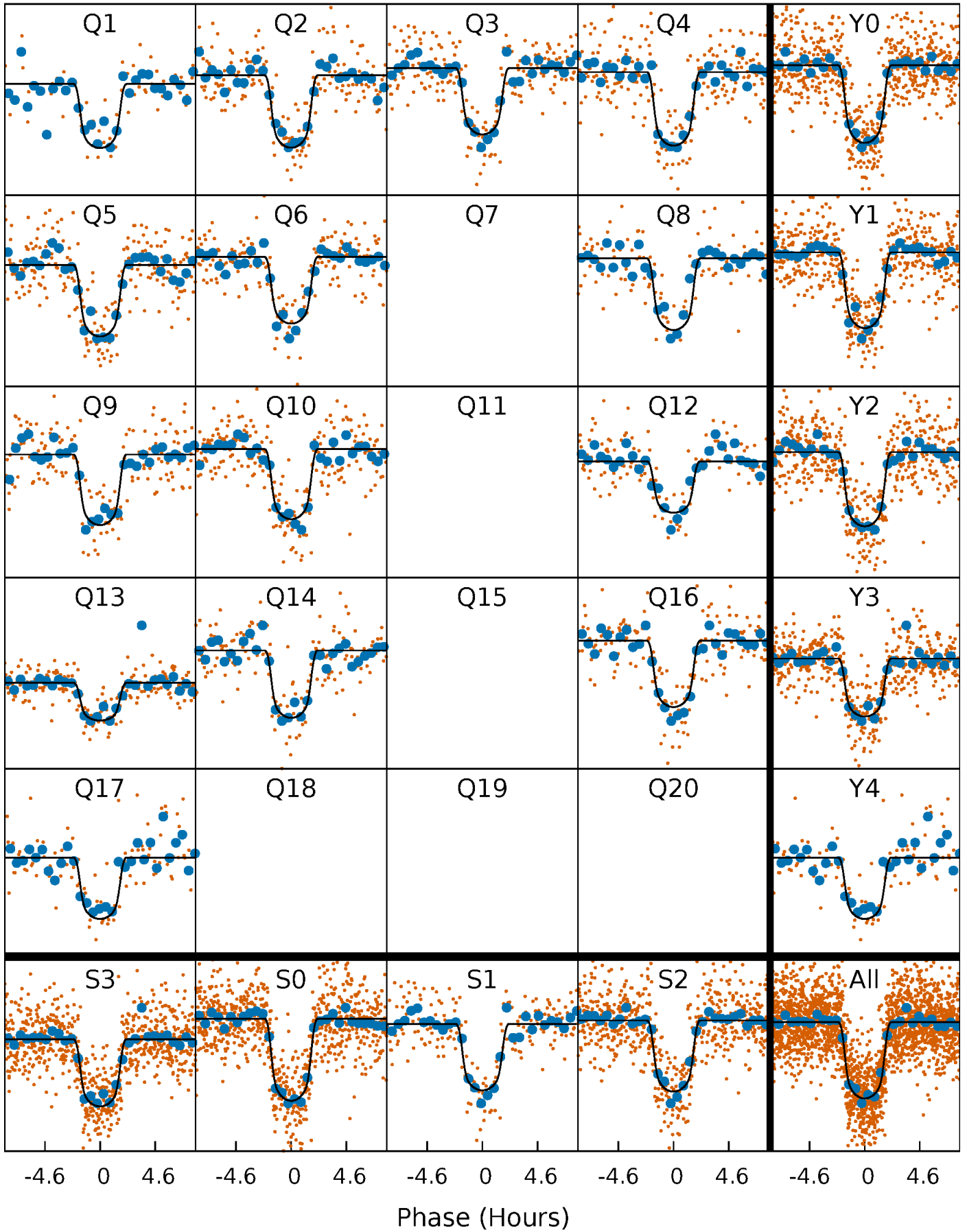
TCE 009607164-01 P= 14.034926 Days  $T_0=143.533955$  (BKJD)





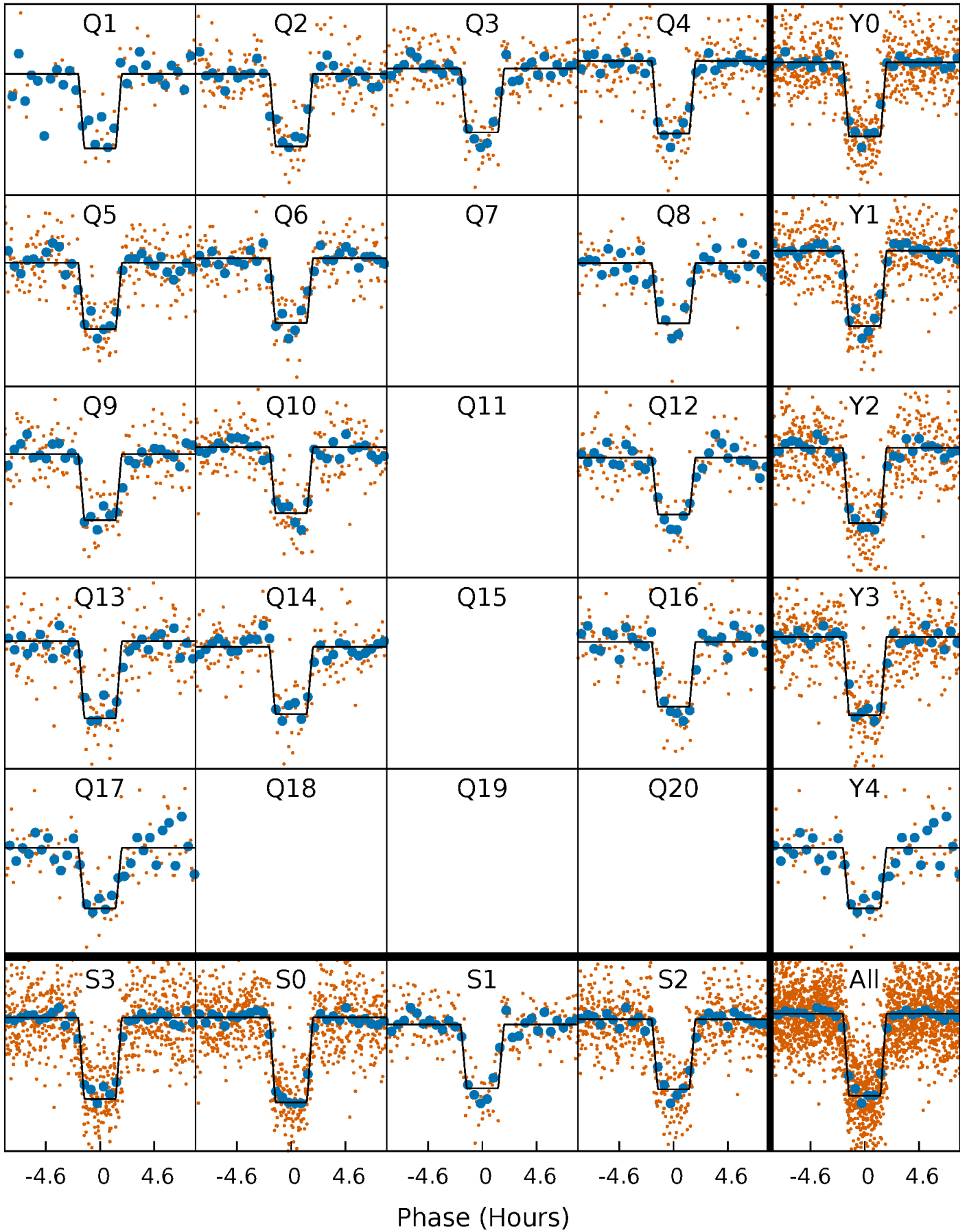
# DV Quarter-Phased Transit Curves

TCE 009607164-01 P= 14.034926 Days  $T_0=143.533955$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

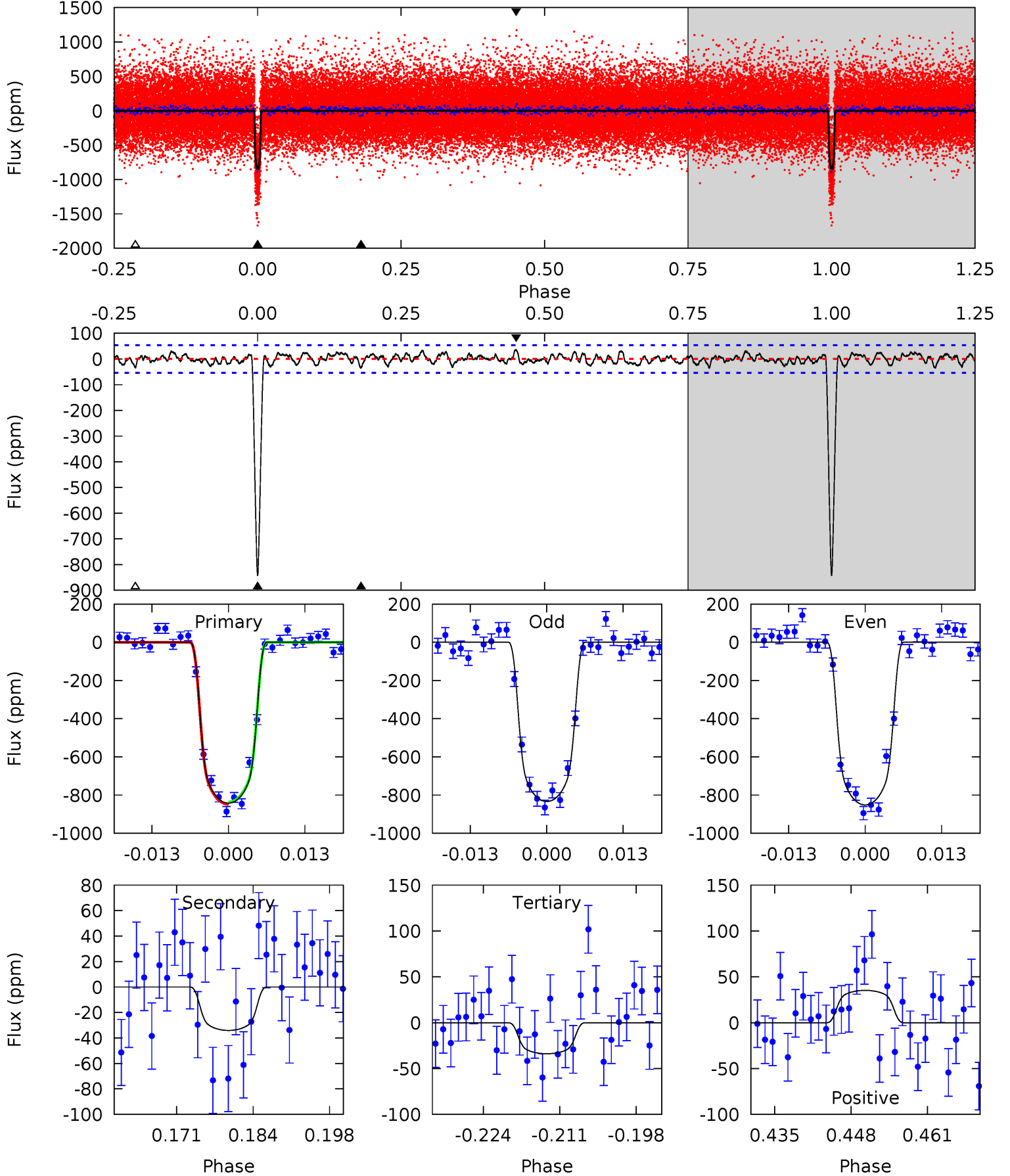
TCE 009607164-01 P= 14.034743 Days  $T_0=143.541914$  (BKJD)



# DV Model-Shift Uniqueness Test

009607164-01,  $P = 14.034926$  Days,  $E = 129.499029$  Days

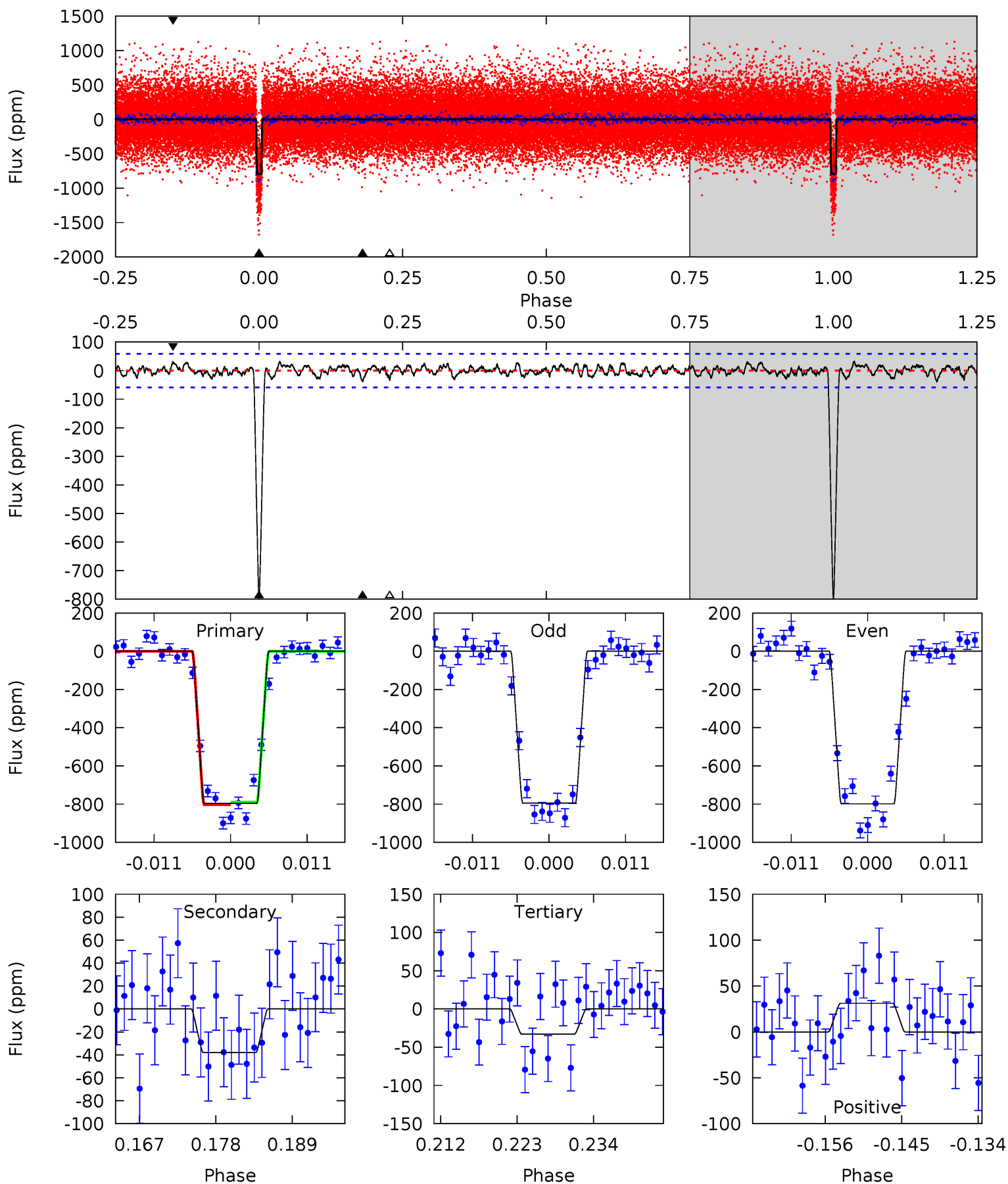
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.9	3.15	3.13	3.26	4.97	2.48	1.26	74.8	74.7	0.02	-0.11	0.83	1.00	0.04	0.50



# Alt Model-Shift Uniqueness Test

009607164-01,  $P = 14.034743$  Days,  $E = 129.507171$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
68.0	3.24	2.82	2.65	5.01	2.54	1.05	65.2	65.3	0.42	0.59	0.18	1.01	0.04	0.61



### Stellar Parameters For KIC 009607164

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5258^{+158}_{-142}$	$4.513^{+0.095}_{-0.086}$	$-0.320^{+0.350}_{-0.300}$	$0.785^{+0.102}_{-0.091}$	$0.731^{+0.109}_{-0.047}$	$2.131^{+0.816}_{-0.540}$
	+3%/-3%	+2%/-2%	+109%/-94%	+13%/-12%	+15%/-6%	+38%/-25%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009607164-01 / KOI 0587.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-34 \pm 11$	$2.77^{+0.23}_{-0.21}$	$899^{+38}_{-38}$	$2915^{+142}_{-165}$	$25^{+10}_{-8}$
Alt.	$-38 \pm 12$	$2.48^{+0.23}_{-0.20}$	$898^{+36}_{-40}$	$3057^{+145}_{-162}$	$36^{+14}_{-12}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



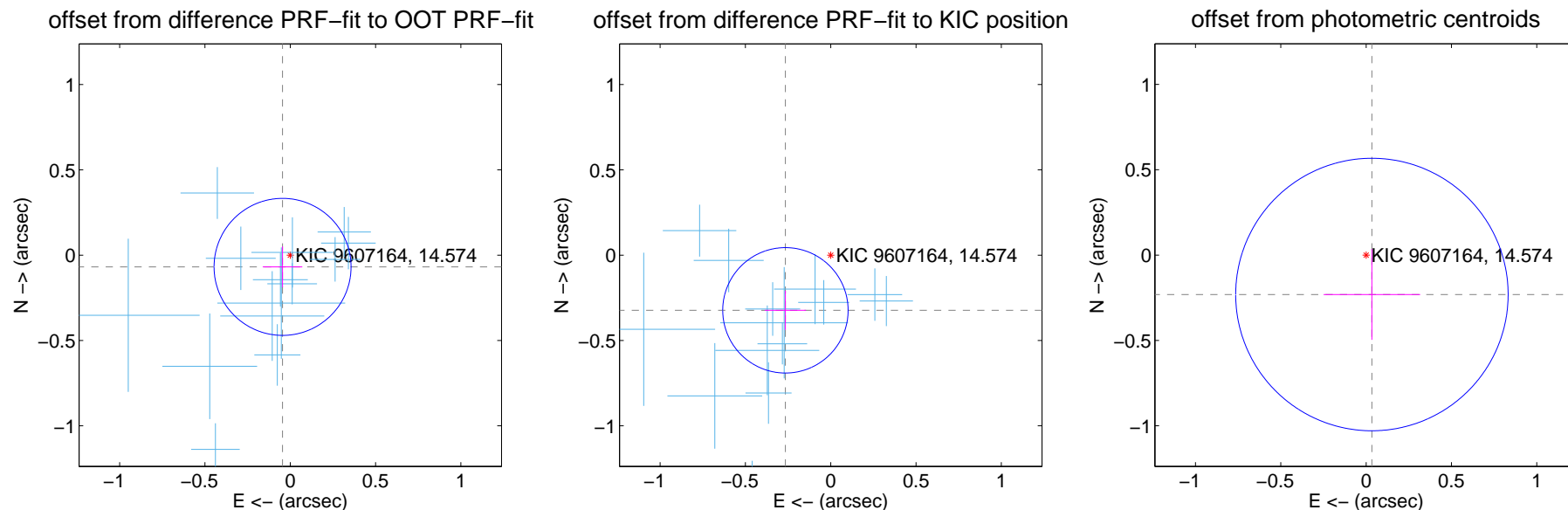
## DV Centroid Data

Supplemental centroid analysis for 009607164-01. Kepler magnitude: 14.57. Transit SNR 53.80

There are 14 quarters with good PRF difference image offsets

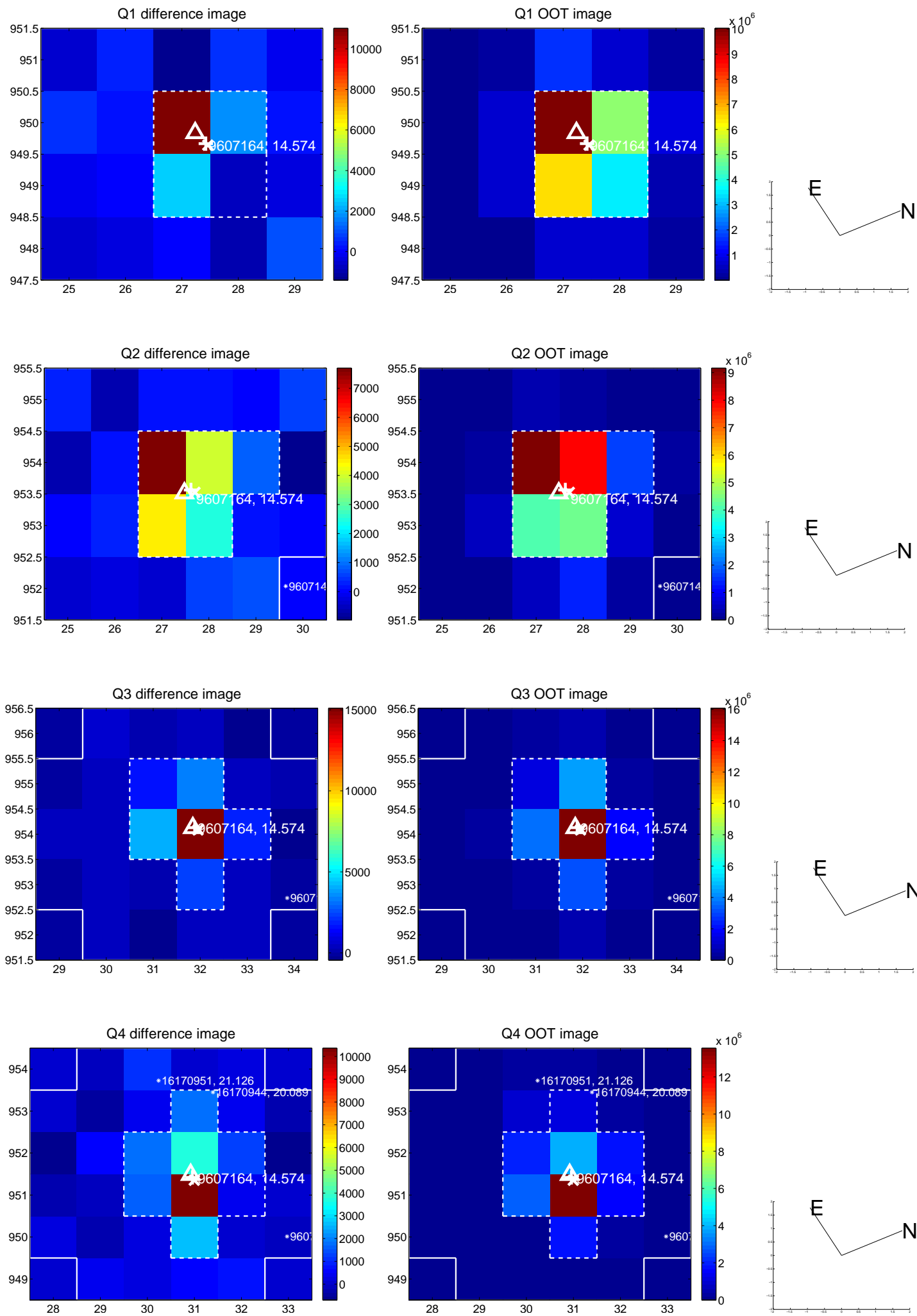
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.082 \pm 0.134$	0.61	$0.045 \pm 0.116$	$-0.069 \pm 0.120$
PRF-fit source offset from KIC position	<b><math>0.418 \pm 0.122</math></b>	<b>3.42</b>	$0.265 \pm 0.121$	$-0.323 \pm 0.115$
photometric centroid source offset	$0.23 \pm 0.27$	0.88	$-0.03 \pm 0.28$	$-0.23 \pm 0.27$

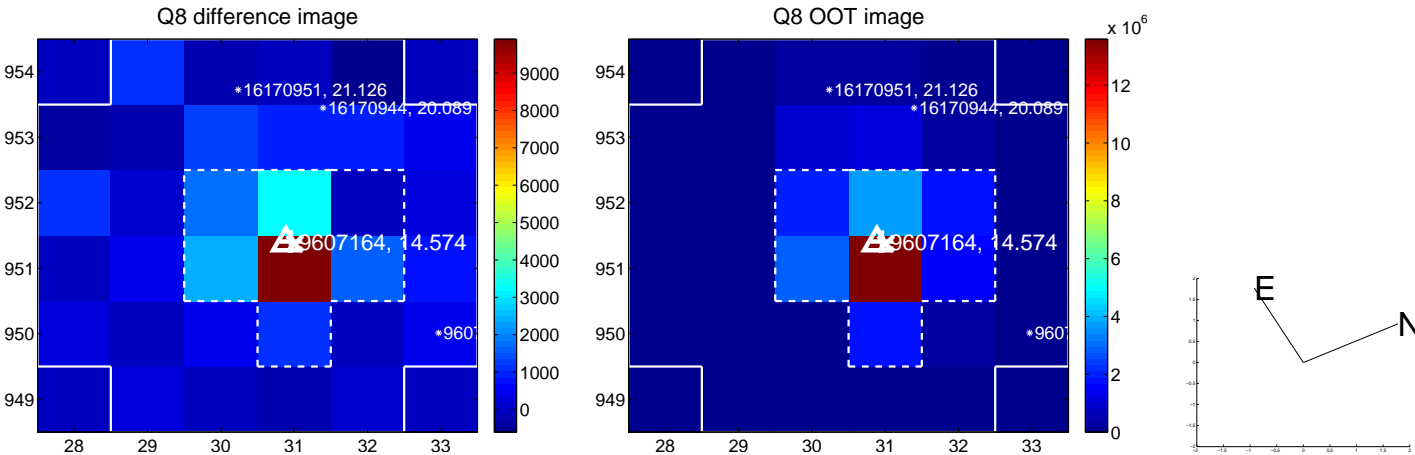
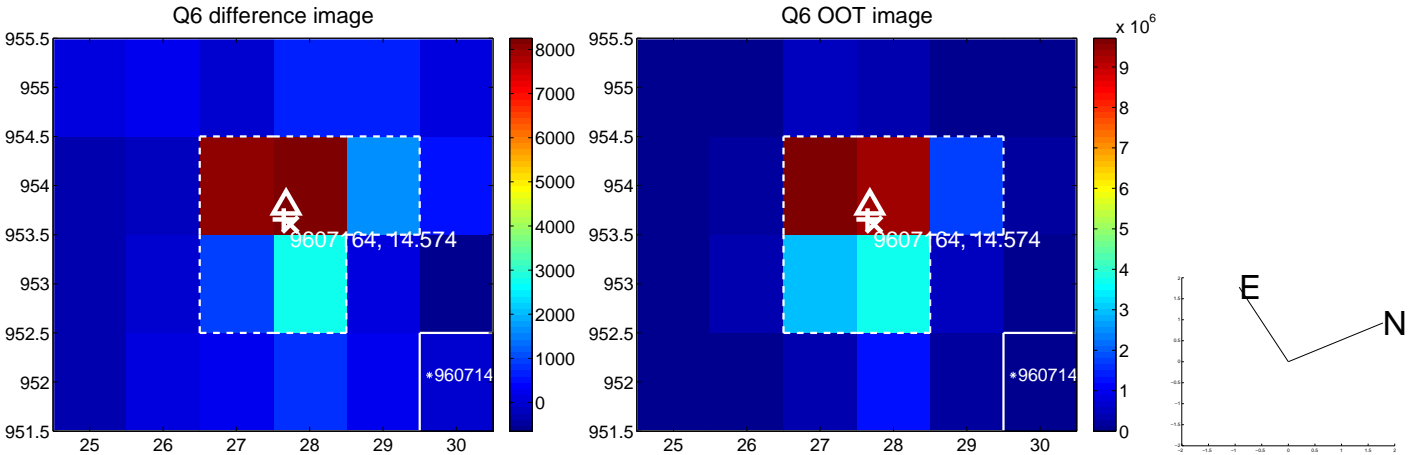
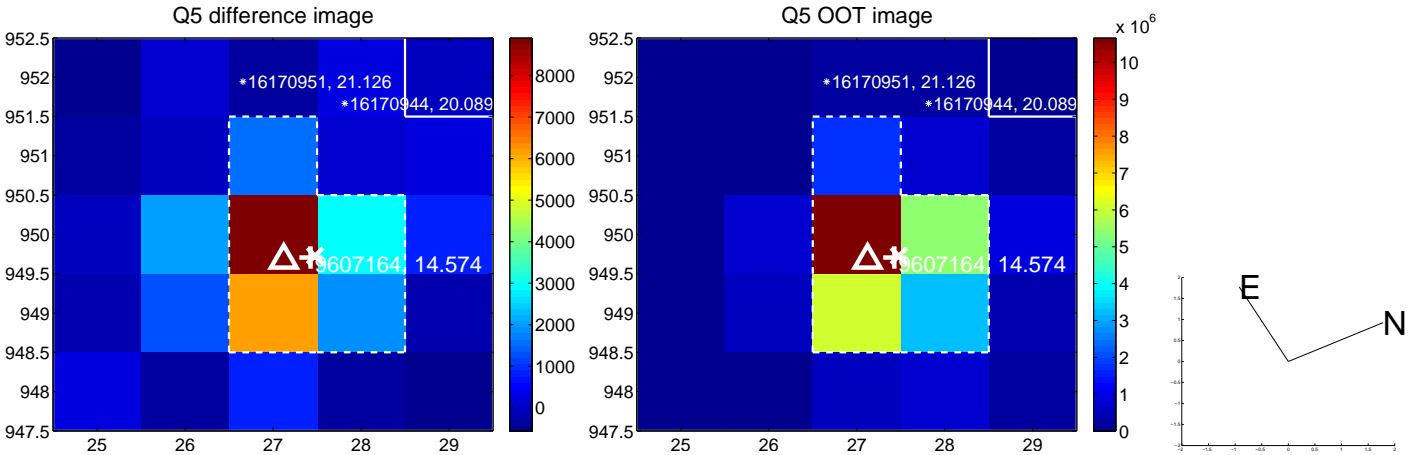


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

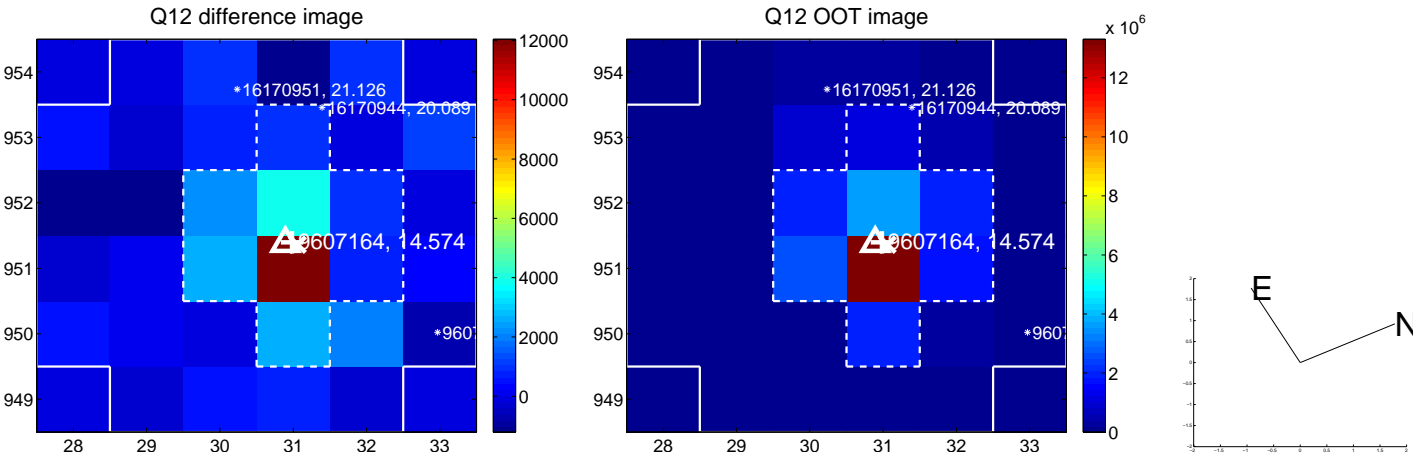
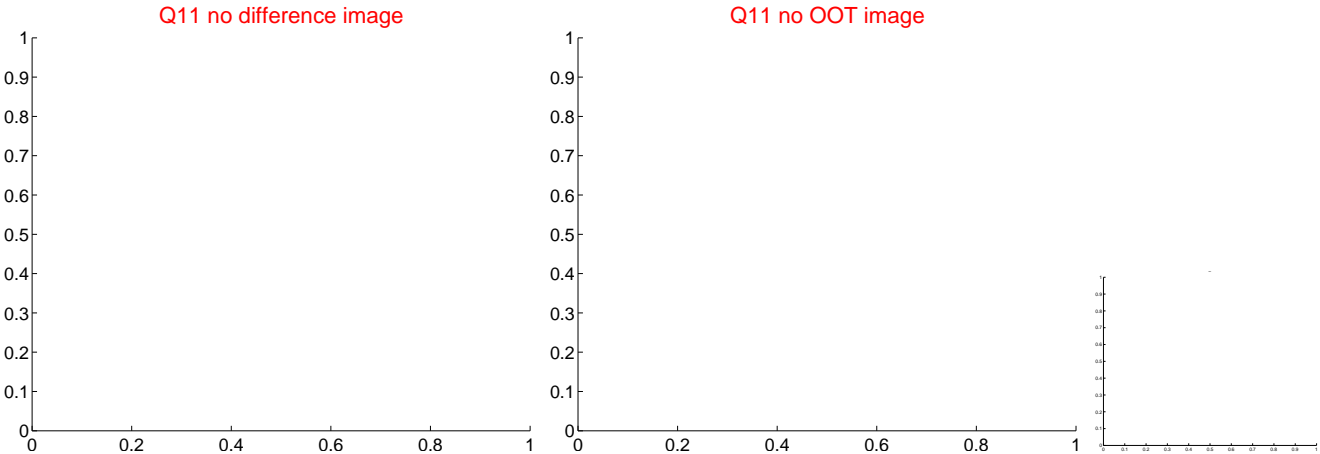
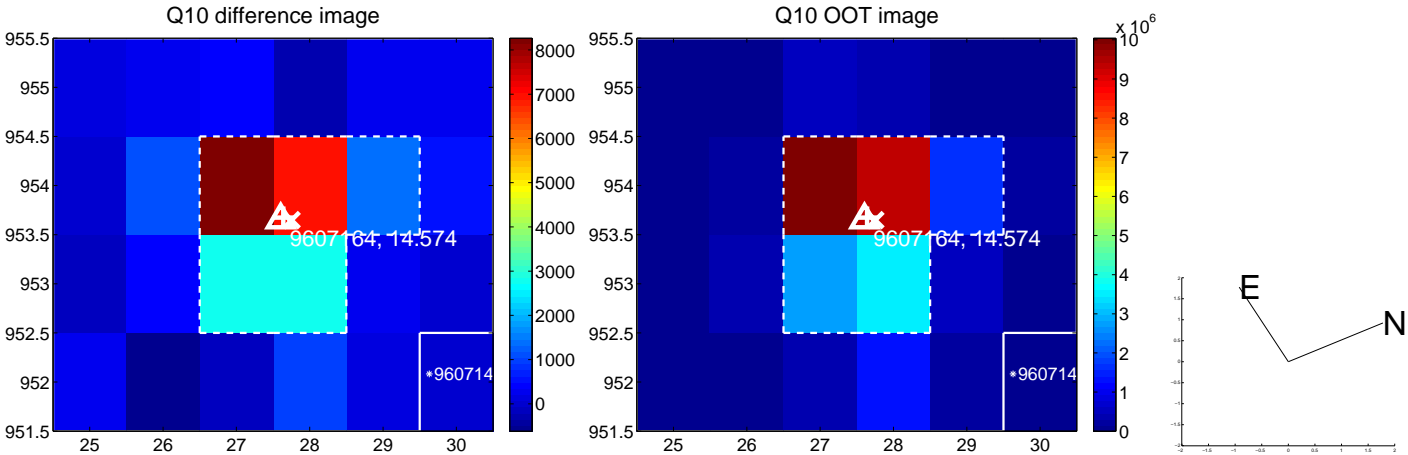
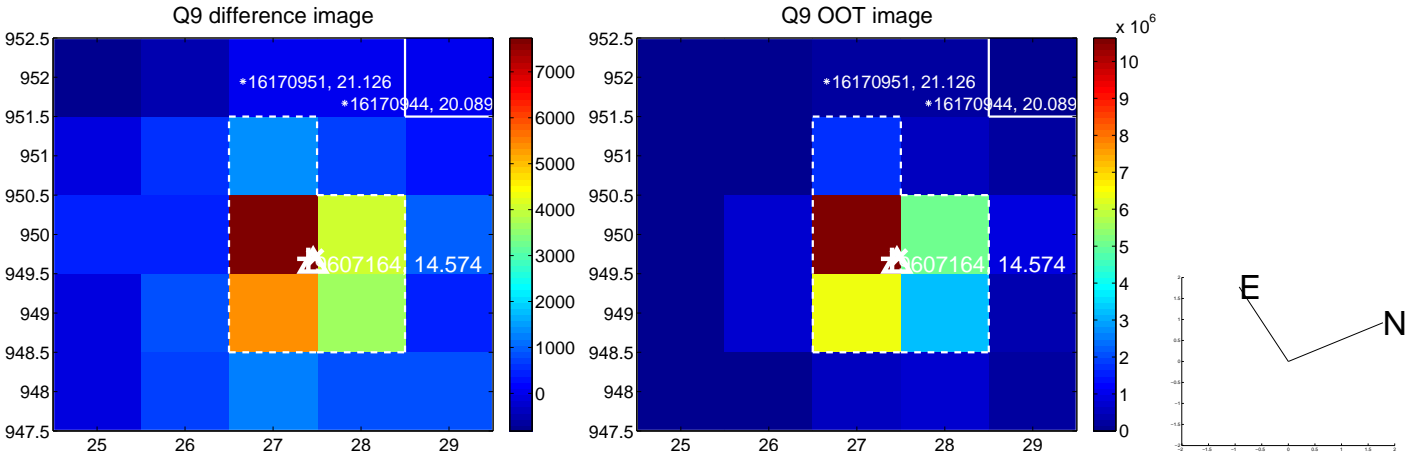
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



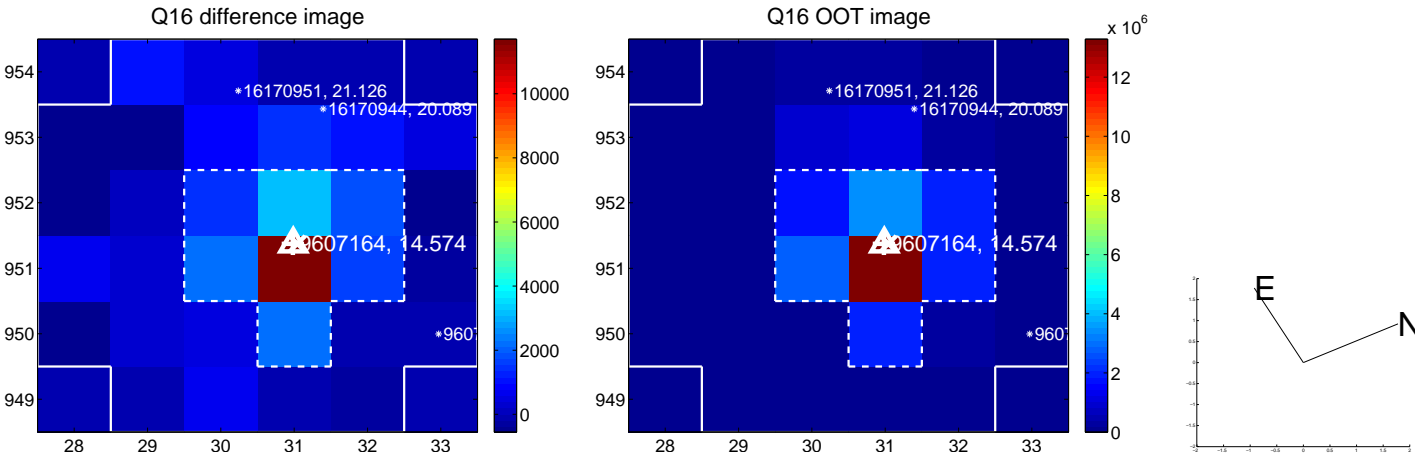
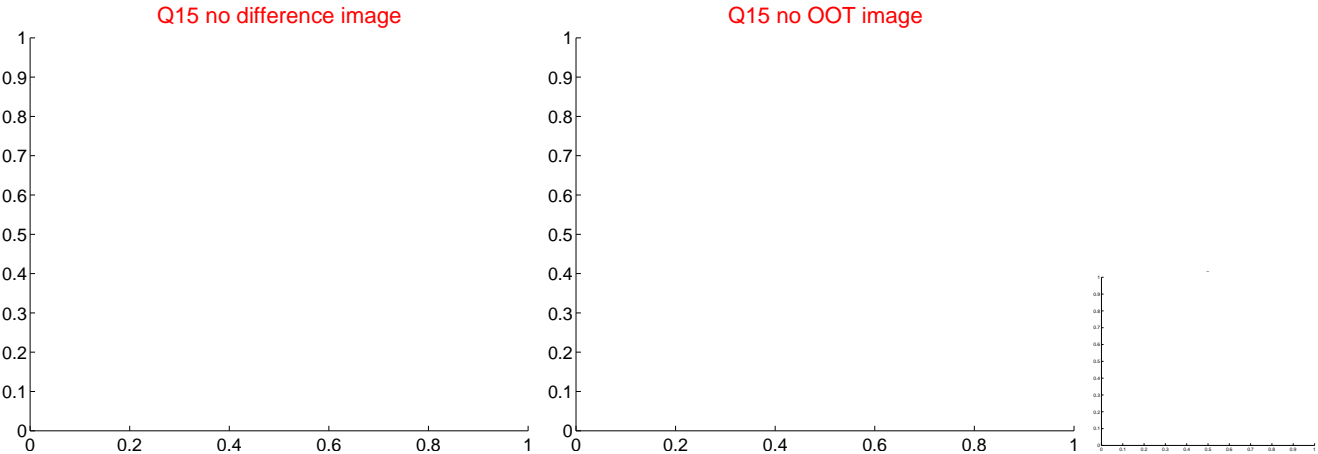
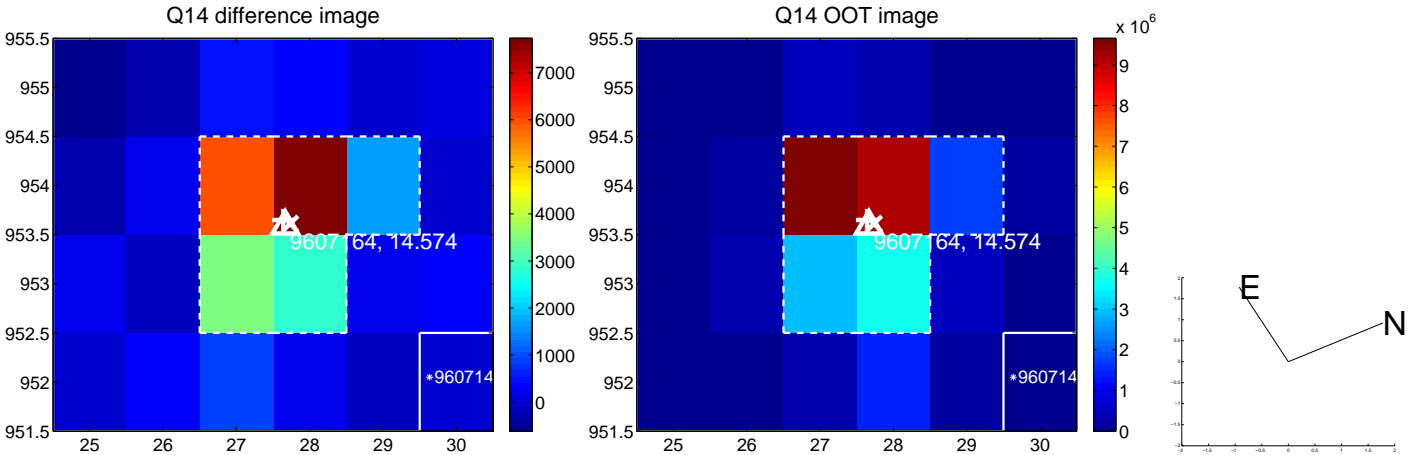
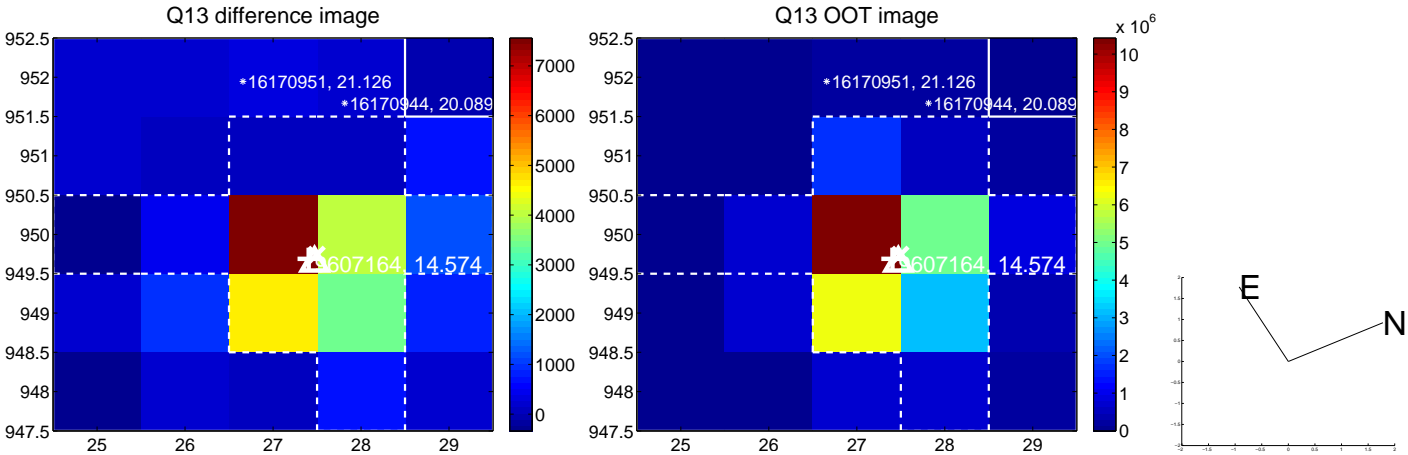
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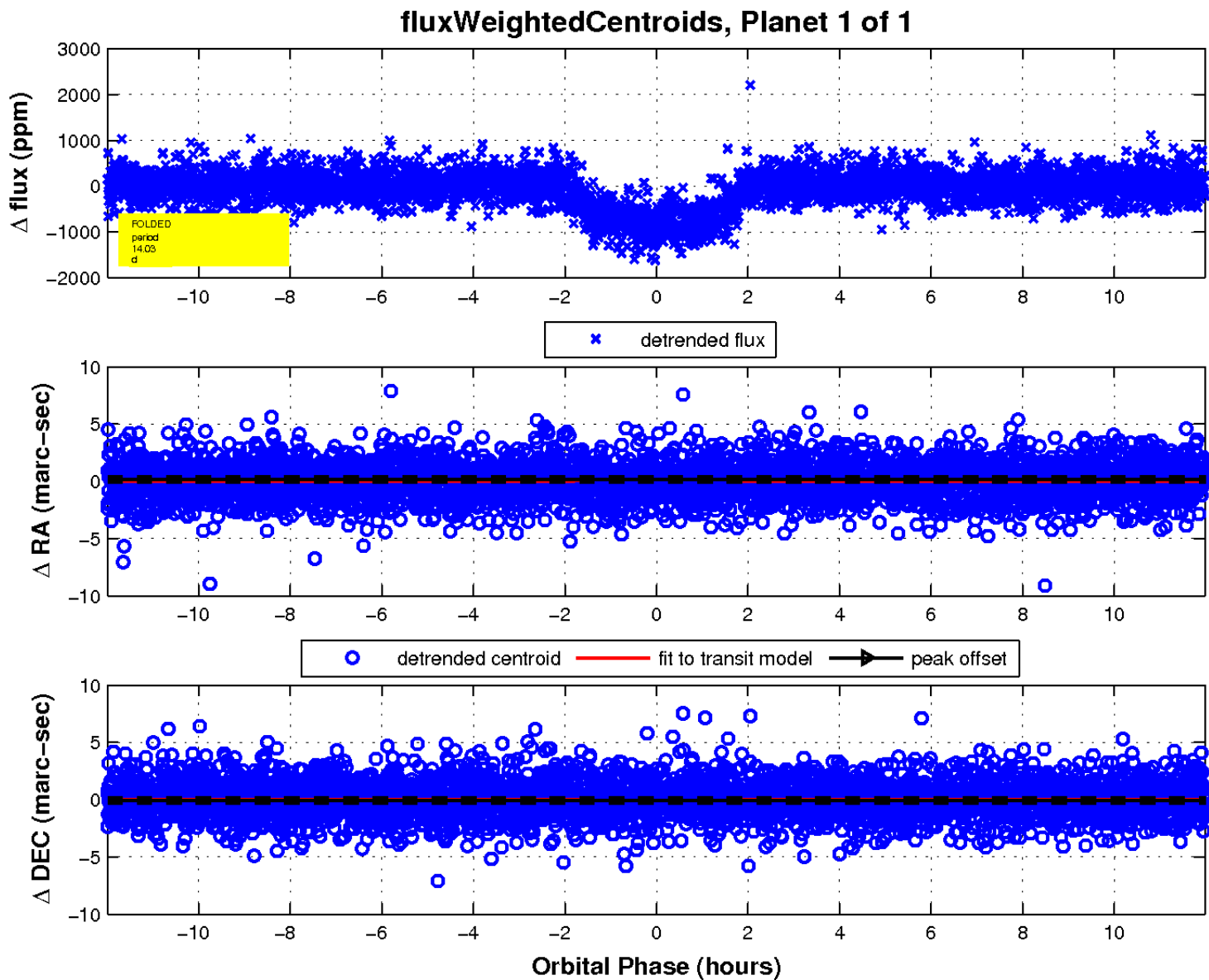
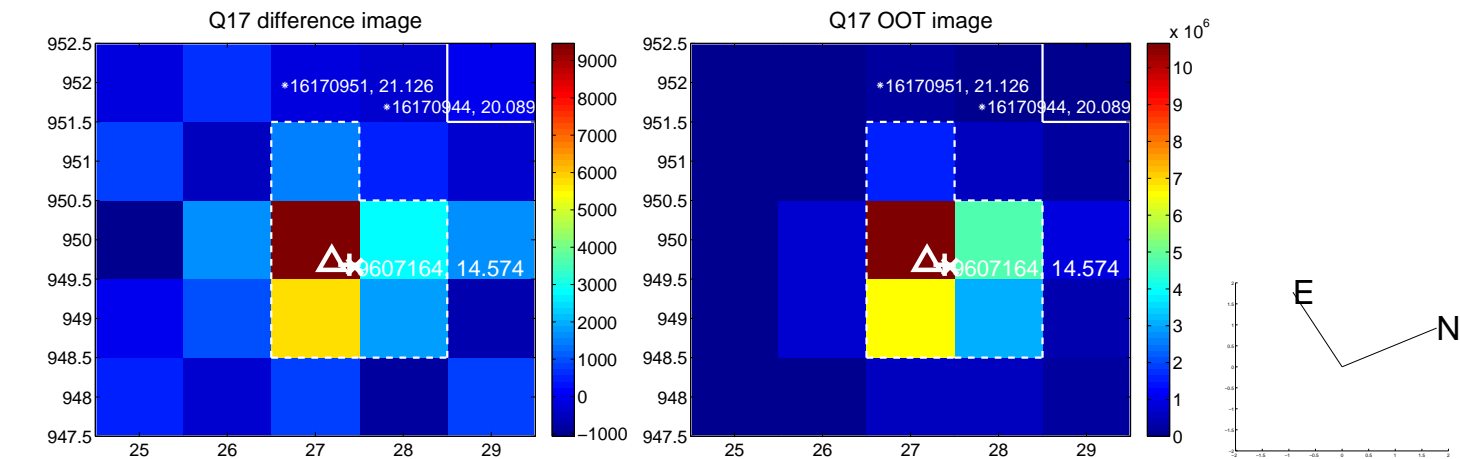


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

